

Mini-STEM School

2013



Graduate School

UNIVERSITY OF COLORADO
DENVER | ANSCHUTZ MEDICAL CAMPUS

Anschutz Office Phone: 303-724-2911; Denver Office Phone: 303-315-2183
E-mail: Graduate.School@ucdenver.edu; Web: ucdenver.edu/graduateschool



Two campuses, one university

One of the nation's top public urban research universities, the University of Colorado Denver | Anschutz Medical Campus provides a diverse body of students with opportunities to enhance their lives and careers at the undergraduate, graduate and doctoral levels.



ANSCHUTZ
MEDICAL CAMPUS

Located in Aurora, Colo., it is the world's only completely new education, research and patient care facility. The largest academic health center between Chicago, Texas and the West Coast, CU Anschutz has three interrelated focuses: education, research and clinical care for more than 500,000 patients a year.



DENVER
CAMPUS

Located in the heart of downtown Denver, Colo., it is a premier urban learning environment that fuels Colorado's growth and provides high-level, high-quality academic opportunities in heart of the city. At CU Denver, the city is an extension of the classroom, and real-world experiences are standard.

Comprehensive in scope, entrepreneurial in spirit and innovative at heart

- » More than **130 degree programs** in 13 schools and colleges
- » More than **\$421 million** in sponsored research awards (FY 10-11)
- » Educates students on two campuses, online and in programs and centers across the state
- » Awards **more graduate degrees** than any other Colorado university—one third of all graduate degrees in the state (FY 10-11)
- » Students come from **50 states** and **134 countries**
- » More than 100,000 alumni, two-thirds of whom stay in Colorado
- » Receives **less than 9 percent** of total revenues from state appropriations
- » Net economic gain to state: **\$1** in state appropriations turns into **\$23** in statewide economic impact

One of Colorado's most diverse universities

- » **32 percent** of undergraduates are students of color, a number that has increased every year for 8 years.
- » On the Denver Campus, **one in three** undergraduates is a student of color, up from one in four just a few years ago; **32 percent** are first-generation to college.
- » At the School of Medicine, students of color have **tripled** over the past six years.

HIGH MARKS IN
DIVERSITY

UNIVERSITY FACTS 2011-12

ENROLLMENT (Fall 2011)

- » **18,001** total enrollment (10,136 undergraduate, 7,865 graduate)
- » Anschutz Medical Campus: **3,556** (409 undergraduate, 3,147 graduate)
- » Denver Campus: **14,445** (9,727 undergraduate, 4,718 graduate)
- » **74%** full time
- » **13%** out-of-state residents
- » **6%** international students
- » **32,000** students served annually, including noncredit, professional development and personal enrichment classes

CLASS SIZE

- » Student-to-faculty ratio: **17:1**
- » Average class size: **27**

DEGREES AWARDED (FY 2010-11)

- » Total: **4,590**
- » Undergraduate: 2,034
- » Graduate: 2,556

ucdenver.edu

SCHOOLS AND COLLEGES

- » College of Architecture and Planning
- » College of Arts & Media
- » Business School
- » School of Dental Medicine*
- » School of Education & Human Development
- » College of Engineering and Applied Science
- » The Graduate School
- » College of Liberal Arts and Sciences
- » School of Medicine*
- » College of Nursing*
- » Skaggs School of Pharmacy and Pharmaceutical Sciences*
- » School of Public Affairs
- » Colorado School of Public Health**

* Schools/colleges located at the Anschutz Medical Campus

** Colorado School of Public Health is a tri-institutional organization shared by Colorado State University and the University of Northern Colorado

University of Colorado Denver
1250 14th Street
Denver, Colorado 80217

University of Colorado
Anschutz Medical Campus
13001 E 17th Place
Aurora, Colorado

ucdenver.edu

ONLYS AND FIRSTS

- » Only architecture school in Colorado and one of the largest in the U.S.
- » Only dental school in Colorado
- » First nurse practitioner and school nurse programs in the U.S. (1965)
- » First liver transplant in the world at the School of Medicine

LARGEST IN COLORADO

- » MBA program
- » School of Education & Human Development
- » Veteran student organization

TOP RANKED

The university boasts a number of top national rankings in the *U.S. News & World Report* 2013 edition of Best Graduate Schools:

- » The School of Medicine ranks **#5** for primary care; family medicine ranks **#3**, pediatrics **#5** and rural medicine **#7**.
- » The College of Nursing ranks **#15**; pediatric nurse practitioner **#5** and family nurse practitioner **#16**.
- » The School of Public Affairs is listed at **#29**, with environmental policy and management at **#10**, nonprofit management at **#14** and public administration at **#24**.
- » The Skaggs School of Pharmacy and Pharmaceutical Sciences ranks **#24**.
- » The Business School's Healthcare Management program ranks **#32**.
- » The College of Liberal Arts and Science's biology program ranks **#68**.
- » The School of Education & Human Development is in the **top 100**.

POWER OF PARTNERSHIP

Here are just a few examples of university collaborations that improve our community:

- » CU Denver's new **Boots to Suits** program, developed in partnership with the Denver Chamber of Commerce, engages businesses in supporting veterans in their transition to a successful career.
- » The School of Dental Medicine provides more than **82,000** clinical dental visits each year, including in many of Colorado's most rural and underserved counties.
- » Thanks to **Learning Landscapes**, a partnership between the College of Architecture and Planning and Denver Public Schools, all **97** DPS elementary school playgrounds have been transformed into attractive and safe multi-use parks.
- » The **Colorado School of Public Health**, on the Anschutz Medical Campus, is a unique collaboration among the three major Colorado universities to fill critical public health gaps with committed, capable workers.

BREAKING NEW GROUND

- » Since 1992, inventions by CU Denver|Anschutz researchers have led to the formation of **114 new companies**—ultimately leading to more than **\$5.6 billion** in financing.
- » The School of Medicine conducted the **first liver transplant** in the world, developed the first vaccine for shingles and was the first to use human cell cloning to study genetics and cancer.
- » The new **J.P. Morgan Center for Commodities** at the CU Denver Business School is the first of its kind to provide comprehensive research and education in commodities such as energy, minerals and agriculture.
- » The new **Anschutz Health and Wellness Center** offers state-of-the-art research, education and personalized wellness services in one facility.

052312



University of Colorado **Denver | Anschutz Medical Campus**

More Information at: https://vcuf.ucdenver.edu/ir/Static_Content/EssentialFacts/EssentialFacts2012.pdf

***Welcome to the 2013 Charter Class
of the Mini-STEM School!***

*The Graduate School of the University of Colorado Denver/Anschutz Medical Campus is delighted to launch the first **Mini-STEM School** in Spring 2013.*

*In response to the growing number of career opportunities in the STEM disciplines, faculty from a variety of colleges within CU Denver/AMC will discuss recent discoveries and advances in **Science, Technology, Engineering and Math**. We hope you will find these presentations to be both entertaining and educational and that they ultimately lead to greater interest among students from a broad range of backgrounds to pursue careers in the STEM disciplines.*

With the attendance of at least 6 classes, you will earn a Certificate of Participation. We would also appreciate it if you would please participate in the online evaluation at the conclusion of the Mini-STEM School.

With best regards,

*Barry D. Shur, PhD
Dean, Graduate School,*

*Inge Wefes, PhD
Associate Dean, Graduate School
University of Colorado Denver/Anschutz Medical Campus*

Valuable Contacts at CU Denver/Anschutz Medical Campus:

Graduate School:	Lawrence Street Center 12th Floor, Denver Campus	303-315-2183
	Academic Building 1 1st Floor, Anschutz Campus	303-724-2911
College of Liberal Arts & Sciences Advising Office:		
	North Classroom 4002	303-556-2555
School of Engineering Undeclared Advising:		
	North Classroom 3024	303-556-2831
CU Online -Online Courses:		
	Lawrence Street Center 12th Floor	303-556-6505
Scholarship Resource Office:		
	Tivoli 259	303-352-3608
Student Employment:		
	North Classroom 1030	303-556-6219
Financial Aid:		
	North Classroom 1030	303-556-2886
Veteran Student Services:		
	CU Building 107A	303-556-2630
Disability Resources & Services:		
	North Classroom 2514	303-556-3450
Career Center:		
	Tivoli 267	303-556-2250

Mini-STEM School

January – March 2013



University of Colorado
Denver | Anschutz Medical Campus

Free Parking for registered
students in the Tivoli Garage!

7PM -9PM; Tivoli Turnhalle, Auraria Campus

FREE STEM EDUCATION FOR THE PUBLIC

Faculty from CU Denver/AMC will present on topics related to Science, Technology, Engineering and Mathematics, and the lectures will be understandable to every interested layperson. The Mini-STEM School is *free for all*, and those who do attend at least 6 sessions will receive a certificate. Seating is limited and registration is required:

<http://gswebapps.ucdenver.edu/ministem>

SCIENCE

January 30
Wednesday

Diana F. Tomback, Ph.D.
Professor and Associate Chair,
Department of Integrative Biology

**Evolution and
the Origin of Life**

February 7
Thursday

Martin E. Huber, PhD
Professor of Physics, Director,
Master's of Integrated Sciences

**Closing in on
Dark Matter**

TECHNOLOGY

February 13
Wednesday

Robin Shandas, Ph.D.
Professor & Chair,
Bioengineering

**Biomedical
Engineering**

February 20
Wednesday

Daniel Connors, PhD
Professor, Department of
Electrical Engineering

Computer Vision

ENGINEERING

February 27
Wednesday

Indrani Pal, PhD
Assistant Professor,
College of Engineering and
Applied Science, Civil Engineering

**The Climate-Water
Nexus**

March 6
Wednesday

Nien-Yin Chang, Ph.D., P.E.
Professor, Civil Engineering,
College of Engineering and
Applied Science

**Construction
Engineering**

MATHEMATICS

March 14
Thursday

Michael Ferrara, PhD
Assistant Professor,
Department of Mathematical
and Statistical Sciences

**So You Think
You Have Problems?**

March 20
Wednesday

Loren Cobb, PhD
Associate Professor,
Department of Mathematical
and Statistical Sciences

**Mathematics for
Peacekeeping and
Humanitarian
Emergencies**



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An Initiative of the CU Denver/AMC Graduate School In Collaboration
With STEM Colleges and Departments; Downtown Denver Campus Office:
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Graduate.School@ucdenver.edu Web: www.ucdenver.edu/graduateschool

Mini-STEM School

1 HOUR WEB CHAT WITH THE SPEAKERS: DAYS AND TIMES
Log on: <http://gswebapps.ucdenver.edu/ministem/chat/>

STEM DISCIPLINE:	DAY: WEB Chat	TIME: WEB Chat	TOPIC:	SPEAKER:	Contact For Undergraduate Education	Contact For Graduate Education
SCIENCE	MONDAY February 4	4-5 PM	Evolution and The Origin Of Life	Dr. Diana Tomback	Ms. Kimberly Regier Kimberly.Regier@ucdenver.edu 303-556-8309	Dr. Timberley Roane Timberley.Roane@ucdenver.edu 303-556-6592
	Monday, February 11	4-5 PM	Closing in on Dark Matter	Dr. Martin Huber	Dr. Alberto C. Sadun Alberto.Sadun@UCDenver.edu 303-556-6256	Dr. Martin E. Huber Martin.Huber@UCDenver.edu 303-556-3561
	to be announced in class		Bioengineering	Dr. Robin Shandas	Ms. Angela Van Dijk angela.vandijk@ucdenver.edu 303-724-7296	Dr. Shawna McMahon shawna.mcmahon@ucdenver.edu 303-724-5893
ENGINEERING	Monday February 25	4-5 PM	Computer Vision	Dr. Dan Connors	Dr. Dan Connors Dan.Connors@ucdenver.edu 303-352-3744	Dr. Dan Connors Dan.Connors@ucdenver.edu 303-352-3744
	Thursday, March 7	4-5 PM	The Climate-Water Nexus	Dr. Indrani Pal	303 556-2831 CivilEngineering@ucdenver.edu Electrical@ucdenver.edu Mechanical@ucdenver.edu bioengineering@ucdenver.edu ComputerScience@ucdenver.edu	303 556-2831 CivilEngineering@ucdenver.edu Electrical@ucdenver.edu Mechanical@ucdenver.edu bioengineering@ucdenver.edu ComputerScience@ucdenver.edu
	Monday, March 11	3-4 PM	Construction Engineering	Dr. Nin-Yin Chang	See above	See above
MATHEMATICS	to be announced in class		So you think you have problems?	Dr. Michael Ferrara	Dr. Lynn Bennethum Lynn.Bennethum@UCDenver.edu 303-556-4810	Dr. Stephen Billups Stephen.Billups@ucdenver.edu 303-556-4814
	Thursday, March 21	3-4 PM	Mathematics For Peacekeeping and Humanitarian Emergencies	Dr. Loren Cobb	Dr. Lynn Bennethum Lynn.Bennethum@UCDenver.edu 303-556-4810	Dr. Stephen Billups Stephen.Billups@ucdenver.edu 303-556-4814

SCIENCE

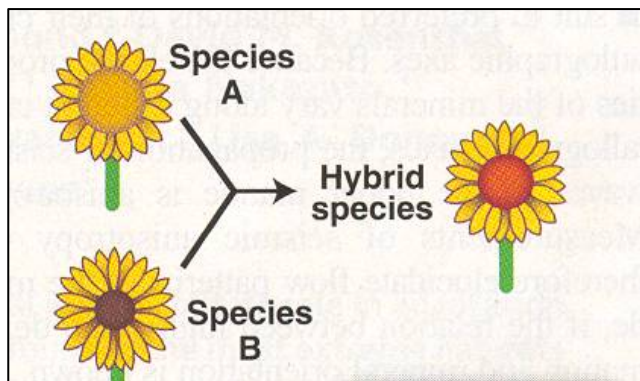
DIANA F. TOMBACK, PHD, Professor and Associate Chair, Department of Integrative Biology



Professor Tomback's expertise includes evolutionary ecology, with application to forest ecology and conservation biology. She is best known for her studies of the coevolved, mutualistic interaction between Clark's nutcracker, a bird of high mountain forests, and several white pine species, particularly whitebark pine, leading to her election in 1994 as Fellow of the American Ornithologists' Union. Author of more than 90 scientific papers, book chapters, and essays, her research over time has revealed major ecological and evolutionary consequences to pines from avian seed dispersal, including growth form, population structure, regeneration biology, and the effects of exotic disease and mountain pine beetles on the bird-pine mutualism. In 2001, together with several colleagues, Dr. Tomback started the Whitebark Pine Ecosystem Foundation <http://www.whitebarkfound.org>, a 501 (c)(3) non-profit based in Missoula, MT.

EVOLUTION AND THE ORIGIN OF LIFE:

Biological evolution is defined as changes in organisms over time (descent with modification), resulting from genetic changes in populations. These genetic changes sometimes lead to new species. All natural populations are evolving over time. Evolutionary theory, through its explanatory power, unifies all fields of biology, including behavior and medicine, as well as disciplines in geology, anthropology, psychology, the social sciences, economics, and even business! First, what processes lead to genetic change in populations? A major mechanism is natural selection. Within the past two decades, there have been a number of studies documenting the process of natural selection in real time in the field and in the lab. But, compelling questions remain: How did life begin on earth and what role, if any, did evolution play?



R.J. Abbott (2003) *Science* 302: 1189-1190

Available for 1hour web discussion: Monday, Feb. 4, 7-8 PM.

SCIENCE

MARTIN E. HUBER, PHD, Professor of Physics, Department of Physics



For his dissertation at Stanford University in 1988, Dr. Huber used superconducting techniques to search for cosmic ray magnetic monopoles, an early candidate for the missing mass, or dark matter, in the universe. Looking for a more practical application of superconductivity, he came to Colorado to study Superconducting Quantum Interference Devices (SQUIDs) at the Boulder laboratories of the National Institute of Standards and Technology (NIST). He closely collaborates with colleagues at NIST, Stanford, and the Weizmann Institute of Science (Israel) in a range of applications involving SQUIDs as sensors and amplifiers. His current research program ranges from particle astrophysics (Cryogenic Dark Matter Search collaboration) to nanomagnetism. On the lighter side, Dr. Huber is an avid fan of science fiction, lapidary, and photography.

CLOSING IN ON DARK MATTER:

Evidence abounds that the universe contains much more mass than we “see”—that is, mass that doesn’t emit or absorb light. Yet, the nature of this “dark” matter is still unknown; we know it by its gravitational effects, but we’ve never detected *any* of it directly. Understanding dark matter is one of the next frontiers in physics. Clues from astronomy, cosmology, and even particle physics point to the whimsical WIMP—Weakly Interacting Massive Particle—as the most likely candidate for dark matter. What is this particle, and what are its properties? Scientists around the world are searching high and low for the answer to these questions: far out into space as well as deep underground here on Earth. The Cryogenic Dark Matter Search (CDMS) experiment is conducted by a collaboration of more than a hundred scientists, including the speaker, and one of many direct detection efforts underway around the world, all using different techniques. Dr. Huber will introduce the evidence for dark matter and describe the challenges in conclusively detecting it in the laboratory, with a special emphasis on the CDMS experiment.



Available for 1hour web discussion: Monday, Feb. 11, 4-5 PM.

TECHNOLOGY

ROBIN SHANDAS, PHD, Professor and Chair, Biomedical Engineering



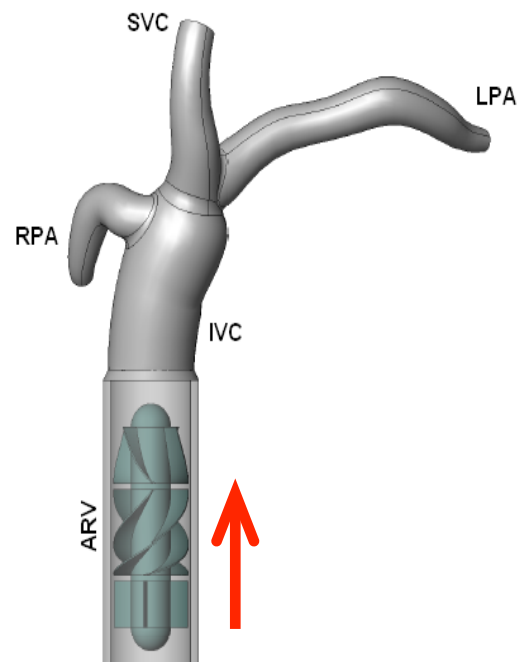
Dr. Shandas (UCSD Bioengineering '93; CalTech Post-Doc '94) is Professor and Chairman of the Department of Bioengineering at the University of Colorado Denver and the University of Colorado School of Medicine, with joint appointments at The Children's Hospital of Colorado in Pediatric Cardiology and the Department of Surgery. His research interests focus on application of bioengineering principles and techniques to the development of novel diagnostics and treatments in congenital heart disease, with particular focus on pediatric pulmonary hypertension. He directs multiple research and training grants including an NIH T32 on Cardiovascular Biomechanics and Imaging, a SCCOR on pediatric pulmonary vascular

disease (co-investigator), an RO1 on the pediatric RV-PA axis, is a collaborator or mentor on multiple other grants, and is one of the few PhD scientists to receive the NHLBI K24 grant on patient-oriented research. He has mentored over 30 graduate students, and many MD fellows and junior faculty. A firm believer in translational bioengineering, he has also started up 6 companies in areas ranging from new polymer materials for medical devices to next-generation ultrasound imaging techniques.

BIOENGINEERING:

Bioengineering is an inherently interdisciplinary field, combining the areas of engineering, medicine, and biomedical sciences. In this talk, I will use examples from the general bioengineering community and from my research program to demonstrate how bioengineering has changed (or will change) medical care, and how it has advanced our understanding of disease progression.

Available for 1hour web discussion: To be announced in class.



TECHNOLOGY

DAN CONNORS, PHD, Assistant Professor, Department of Electrical Engineering at the University of Colorado Denver. Dr. Connors' research focuses on the design and implementation of computer systems that support energy-efficient high-performance computing. Dr. Connors currently investigates accelerating computer vision algorithms on modern computers to achieve real-time operations such as object detection, face recognition, tracking, navigation, and 3D modeling. For his teaching, Dan Connors has received both the University of Colorado Denver and University of Colorado Boulder College of Engineering Outstanding Teaching Award.



COMPUTER VISION:

Computer Vision (CV) is a rapidly growing field, intent on enabling computers to process, analyze, and understand the information of pictures and video cameras to produce information or decisions. In recent years, computer vision has been accelerated in part as a result of both cheaper and more capable cameras, but also largely because of affordable and increasing levels of computer processing power. Algorithms and applications of computer vision include object detection, face detection and recognition, augmented reality, optical character recognition, navigation, and robotics. As the field of computer vision continues to mature, there are numerous ways it will impact society, both for good and bad. The talk will describe the fundamentals of computer vision and its direct iteration with other concepts and fields such as privacy, medical care, transportation, and education.



Available for 1hour web discussion: Monday February 25, 4-5 PM.

ENGINEERING

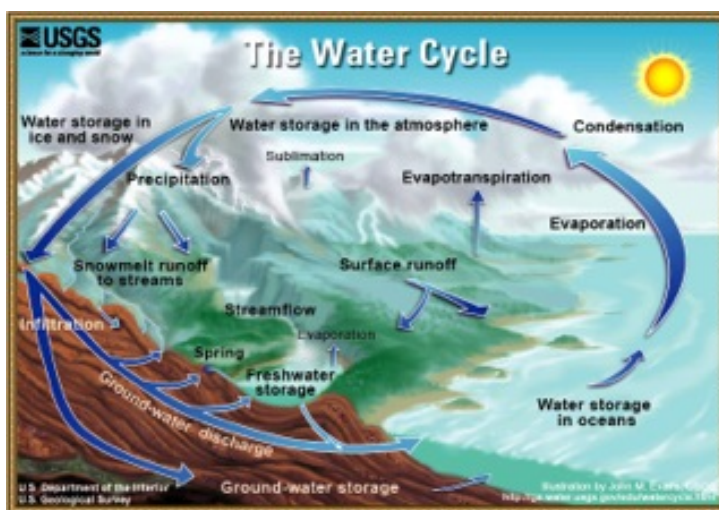
INDRANI PAL, PHD, Assistant Professor, Department of Civil Engineering



Dr. Pal received her undergraduate education in Civil Engineering at the Visvesvaraya Technological University in India followed by training in Germany and the UK. She received her PhD at University of Cambridge, UK with research on Climate Variability/Change and Impacts on Soil Erosion and Land Management. Her current research focus is climate, water and sustainability, specifically, the spatio-temporal analysis of climate and hydro-climate, climate dynamics, and their implications on socio-economy.

THE CLIMATE-WATER NEXUS:

Water and air are two of the five most fundamental elements identified by earliest civilizations. There is a strong interaction between water availability, distribution and climate. It further has associations with energy and food security issues at the current time. Water sits at the nexus of so many more global issues including health, hunger and economic growth. In this talk I'll discuss these interactions, ranging from global to regional sustainability issues focusing mainly on the water crisis – caused by drought, flood, and climate change. Water crisis is less about supply than it is about recognizing water's true value, using it efficiently, and planning for a different future. If these problems are not managed, food supplies could decline, the risk of waterborne diseases could increase, and energy shortages might hamper growth. BUT, at the end, the picture may not be as bad as it seems—there are ways to get there. Science and engineering is part of the solution. Hence, my talk will conclude with some stories to illuminate how a little bit smarter decision could eliminate water security issues and that we should treat water like oil.



Available for 1hour web discussion: To be announced in class.

ENGINEERING

NIEN-YIN (NY) CHANG, PHD, P.E. Professor of Civil Engineering and



Director of the Center for Geotechnical Engineering Science, College of Engineering and Applied Science. He loves people and things in motion. The first love leads him to teaching and the second to research in earthquake engineering. Dr. Chang's life in the higher education includes 38 years at the University of Colorado Denver and four years at the National Taiwan University. His research interest covers soil-structure interaction (seismic and static), deep foundations (driven piles and drilled shafts), seismic responses of and thermal effects on MSE bridge abutments, earthquake-induced soil liquefaction, innovative foundations on expansive soils and nature friendly sustainability. He has numerous publications and

received a couple of UCD Outstanding Research Awards

CONSTRUCTION ENGINEERING:

Construction engineering makes possible the realization of dreams and concepts for a new infrastructure and economic expansion. The history of this country has demonstrated again and again during an economic downturn (recession or depression) that public work projects were initiated to create jobs and prepare the area for future economic expansion. The construction of the Hoover Dam during the great depression of 1920's illustrates its multiple benefits. Today, the Hoover Dam provides power and water needed for the prosperity of the West and the Southwest United States, as evidenced by the great population served by the water and power from the Colorado River.

There are four major types of infrastructure: ground transportation infrastructures, air and water transportation infrastructures, energy, water and food transport infrastructures and building infrastructures. A large number of engineers are needed to join the construction work force to serve the needs of our society and maintain America's global leadership



Available for 1hour web discussion: Monday, March 11, 3-4 PM.

MATHEMATICS

MICHAEL FERRARA, PHD, Assistant Professor, Department of Mathematical and Statistical Sciences

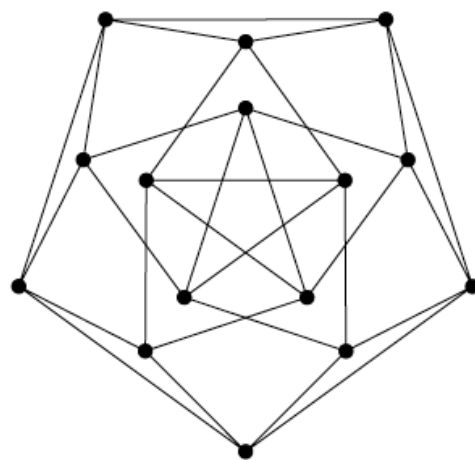


Mike Ferrara received his Ph.D from Emory University in 2005. His research is in Graph Theory, the mathematics of abstract networks, and is currently supported by a grant from the Simons Foundation. Dr. Ferrara greatly enjoys teaching students of all levels, and sees the classroom as an excellent venue to use the skills he obtained through his love of musical theater. In 2012, he was awarded an Excellence in Teaching award from the UCD College of Arts and Sciences, and he leads interactive sessions in local K-12 classrooms through the volunteer-based "Math on My Mind" community outreach program, which he organizes.

SO YOU THINK YOU HAVE PROBLEMS?

"Math is everywhere" is a commonly uttered, and undoubtedly true phrase. Many of our modern conveniences, including the internet, air travel, medical imaging and more, depend on simple and complex mathematical ideas. These novel applications of mathematics often arise from earlier, more abstract work carried out by mysterious figures known as Pure Mathematicians, whose place in the STEM world is generally less visible and not as well-understood.

In this class of Mini STEM School, we will explore the world of the pure mathematician and examine some of the differences between "Pure" and "Applied" Mathematics. As it turns out, they are frequently not all that far apart...



Available for 1hour web discussion: To be announced in class.

MATHEMATICS

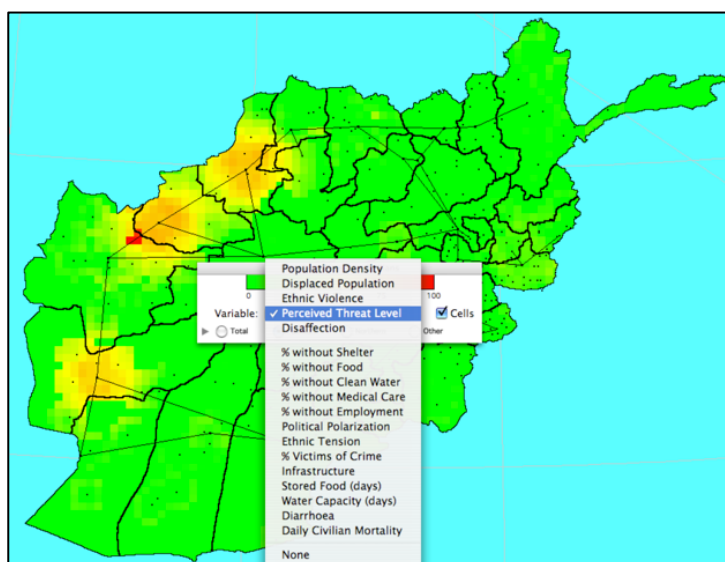
LOREN COBB, PHD, Associate Research Professor Department of Mathematical and Statistical Sciences. Dr. Cobb is a mathematical sociologist who has worked for 20 years on simulations of countries in the aftermath of civil wars and natural disasters. In the Department of Mathematical and Statistical Sciences, he teaches and pursues funded research in Statistics and Computational Mathematics.



MATHEMATICS FOR PEACEKEEPING AND HUMANITARIAN EMERGENCIES;

United Nations peacekeeping forces are often called in when a civil war has run its course, and both sides are utterly exhausted from years of fighting. The condition of the civilian populace is dire, with millions living in refugee camps or on the move, economic structures in ruins, and government collapsed. The international community can help at this point, and mathematics can show what will work and what will not. These models have been used since 1994 by the United States, Europe, and the United Nations to train military peacekeeping forces and their civilian counterparts.

We start out with simple refugee dynamics, constructing a model of who leaves their homes, why, and where they go. Then we add public health, ethnic relations, and recovery economics. Finally, we look at the hardest problems of all: reconstructing a healthy government, enabling a sane and safe political discourse, and moving towards democratic elections.



The mathematics we use to describe these dynamics is surprisingly easy to understand, and requires no prior experience with calculus. Our emphasis is on concepts and behavior, not the gritty details of mathematical formulae.

Available for 1hour web discussion: Thursday, March 21, 3-4 PM.

THANK YOU!

We would like to express our heartfelt gratitude to the many people and organizations who supported the development of the Mini-STEM School.

Thank you very much to our **speakers** for taking the time to present and discuss complex issues with an interested lay audience.

Very special thanks to **Michael Matulonis** and the **Auraria Higher Education Center** for their generosity that makes it possible for us to offer these classes with free parking.

Many thanks to the staff of the Graduate School, especially **Pat Goggans, Jim Finster** and **Milinda Walker**. We are also thankful for the support of **Krystal Allen, Jessica Halliday** and **Teresa Bauer-Sogi**, and our colleagues in the Department of Bioengineering, **Dr. Shawna McMahon** and **Tanya Evans**.

Thank you to **Dr. John Cohen**, the founder of the Mini-Med School, which served as the prototype for the Mini-STEM School, and to **Dr. Helen MacFarlane** for much helpful information regarding the design of the event.

Thank you to **Marcia Neville**, CU Denver Media Relations, for her outstanding efforts to advertise and promote the Mini-STEM School.

Thanks to the many people and organizations who helped publicize the Mini-STEM School, including **Gay Page** and **Jeff Conn** from the Federal Executive Board, **Christopher W. Thomas** and **Daniel H. Templeton** from the Department of Military Science, as well as the **Aurora Sentinel**, the **Denver Post**, **Colorado Public Radio**, the **Denver Museum of Nature and Science**, the **HSC Library**, the **Colorado Bioscience Association** and the **Rocky Mountain Venture Club**.

And finally, many thanks to our **Mini-STEM School Students** for their interest in learning and taking classes after a full day of work.



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